WHAT IS CLAIMED IS:

SUM A²

1. A method for detecting locations of path rays in a multi-path channel receiver having multiple time references, the method comprising the steps of:

5   searching for locations of received path rays;

determining the locations of the received path rays;

tracking the locations of the received path rays for a predetermined amount of time; and

if the locations are lost after the predetermined amount of time, initiating a

10   new search for the locations of the received path rays.

2. The method of claim 1, wherein the step of searching includes:

determining a probable location of a most significant path ray;

shifting the location within a predetermined interval;

15   analyzing each shifted location to determine whether the shifted location corresponds to the actual location of the received path ray; and

depending on the analysis results, completing the search or determining a probable location of a next most significant ray.

20   3. The method of claim 2, wherein if the shifted location corresponds to the actual location of the received path ray, the step of completing the search comprises locating the other path rays based on the knowledge of relative distances between he located path ray and the other path rays.

25   4. The method of claim 2, wherein the step of analyzing includes:

correlating each shifted location with a pilot sequence; and

determining if the correlation results exceed a predetermined threshold.

5. The method of claim 4, further comprising, if the correlation results do not exceed the threshold:

> determining whether all the significant path rays have been analyzed; and
>
> if so, initiating a complete search for the path ray locations.

6. The method of claim 1, wherein the steps are initiated when the receiver switches from a time reference of low accuracy to a time reference of high accuracy.

7. The method of claim 6, further comprising, when switching from the time reference of low accuracy to the time reference of high accuracy, a step of calibrating the low accuracy time reference to the high accuracy time reference.

8. The method of claim 7, wherein the step of calibrating includes averaging measurements of the ratio of clock cycles of the time reference of high accuracy to the clock cycles of the time reference of low accuracy.

9. The method of claim 1, wherein the receiver is a cellular radio.

10. An apparatus for detecting locations of path rays in a multi-path receiver, the apparatus comprising:

> a tracker for tracking the path rays for a predetermined amount of time; and
>
> a searcher for locating the path rays when the predetermined amount of time expires and the locations are lost.

11. The apparatus of claim 10, wherein the searcher determines a probable location of a most significant path ray, shifts the location within a predetermined interval, and analyzes each shifted location to determine whether the shifted location corresponds to the actual location of the received path ray, wherein depending on the analysis results,

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the search is completed or a probable location of next most significant ray is determined.

12. The apparatus of claim 11, wherein if the shifted location corresponds to the actual location of the received path ray, the searcher locates the other path rays based on
5   the knowledge of relative distances between the located path ray and the other path rays.

13. The apparatus of claim 11, wherein the searcher analyzes each shifted location by correlating each shifted location with a pilot sequence and determining if the correlation results exceed a predetermined threshold.
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14. The apparatus of claim 13, wherein if the correlation results do not exceed the threshold, the searcher determines whether all the significant path rays have been analyzed, and if so, initiates a complete search for the path ray locations.

15   15. The apparatus of claim 10, wherein the tracking and searching are performed when switching from a time reference of low accuracy to a time reference of high accuracy.

16. The apparatus of claim 15, wherein when switching from the time reference
20   of low accuracy to a time reference of high accuracy, the time reference of low accuracy is calibrated to the time reference of high accuracy.

17. The apparatus of claim 16, wherein the calibration includes averaging measurements of the ratio of clock cycles of the time reference of high accuracy to the
25   clock cycles of the time reference of low accuracy.

18. The apparatus of claim 10, wherein the receiver is a cellular radio.